March/April 2006

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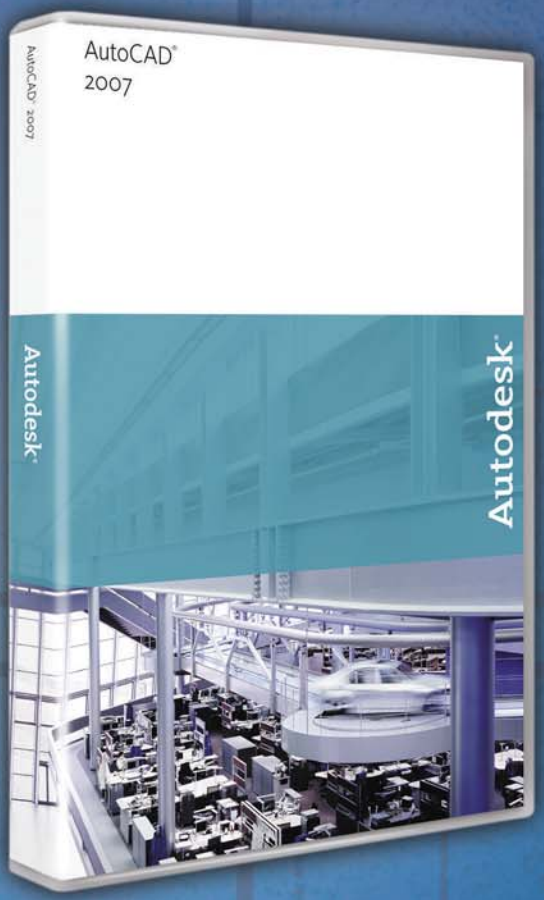

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AutoCAD 2007

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Also in this issue

- A horizontal approach in Revit
- Limits in AutoCAD
- Tips for Architectural Desktop

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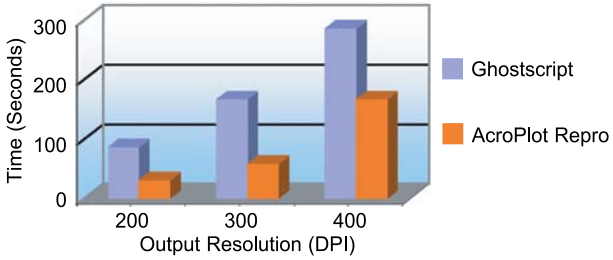

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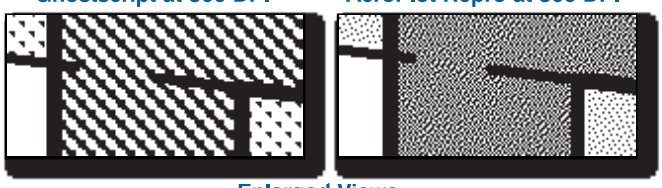

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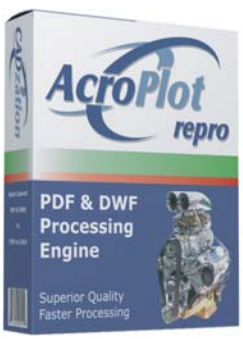

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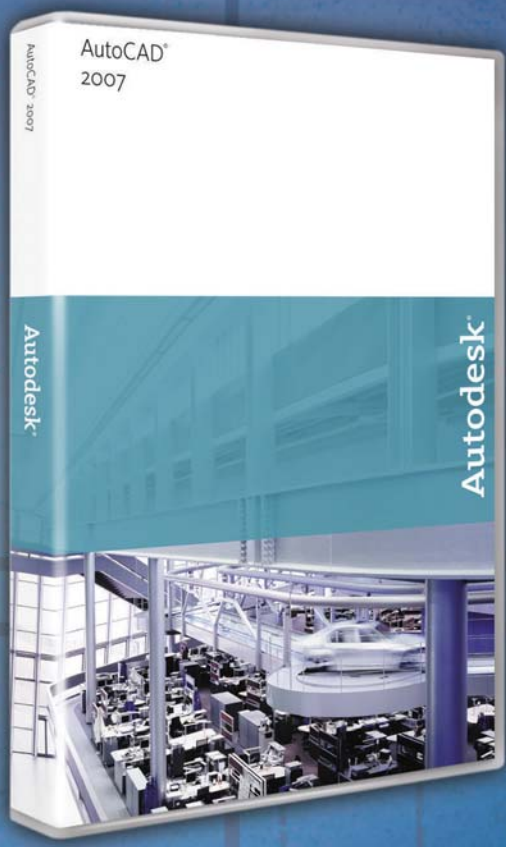

What's New?

AutoCAD 2007

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AUGIWorld

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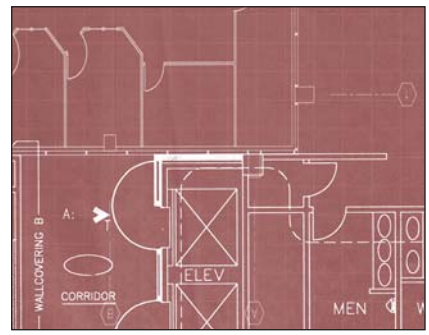

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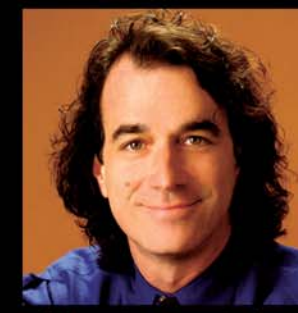

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Dying for Change, Part 2

Moving from stalemate and stagnate to strategy and strength

Most of us who work with CAD applications are accustomed to change. We see it in every release. It may be a small tweak of the software or a major new feature, but it is still change. People react to change in different ways. Some embrace it and can't wait for the next big thing to come down the pike. Other bristle against it and dig in their heels against the tides of tomorrow. I trust that those who are reading this have some desire to move ahead and see change take place within their company or CAD product.

Team up for tomorrow

I wrote last time about rocking the boat a little—starting to openly discuss frustrations with shortcomings of the existing situation. You do not want to go on too long because people will start formulating their own solutions to the problem. When people start discussing solutions, that is the time to rock the boat a little harder by coalescing the comments.

Pay attention to who is offering solutions and bring them onto your team. Create a team of people (I dislike the term "committee,"—it is so old school). A team is empowered to reach a goal and then disbands when success is achieved.

As you gather your team of solution providers, remember to keep it small enough to control, but large enough to represent all factions within the firm. If someone feels left out, he or she will resist the change. I have found that I start with a large group and it naturally narrows down. It ends up with two types of people. The ones who want to be involved in deciding what changes to make (doers) and the ones who want to review and approve them (reviewers). I narrow my team down by asking more and more from participants. The ones who are really dedicated to progress will stick around. The others will fade away, missing a meeting here and there and finally never showing up at all.

Once your team is down to the doers, keep the reviewers informed and allow them to comment. If their comments start to become unconstructive, challenge them to offer solutions and not just complaints. Requiring them to include a possible positive solution to a problem will make them reticent to speak up unless it is a critical issue.

Produce the product

The team should move as fast as it can to achieve the goal it sets out to do. If the goal is to define a better way to produce Door Schedules, then focus on that goal, make a plan to get there, work the plan, tweak the results, applaud your success, and then disband. It is bad to have a team exist too long. If they stay together without a common goal then they tend to digress into a standing committee and become bureaucratic overseers.

Sorry… do I sound like I am against committees? Actually I am not. I am on a few. They achieve great things when they stay focused and remain goal-oriented. In general, committees are good for maintaining, enforcing, and refining, but not creating. It may just be the semantics of the word that bristles. By the end of this article, I will actually be suggesting that you create a committee.

Get team approval

Once you have produced something, make sure that you have team approval. I specifically talk to each team member (doers and reviewers) to make sure that they are behind the product we have produced. The team approach includes the fact that the whole team supports the decisions and products of the team. I ask for verbal consent to the output of the group. Make sure that you get each person to weigh in. Don't let someone be silent on the approval. Sometimes a team member will remain silent when an agreement to move forward is achieved. So pay attention not only to who is talking, but also to who is silent. Don't let a silent protest continue or expand beyond the team meetings to others who may resist the change. As a final touch I usually include the names of all participants if I am producing a document or include them in a memo about the change. Again the point is to have them documented as supporting the plan.

Getting the royal seal

Now that the team is together on the output of the group you can move forward with implementing the change. Depending on what the changes are, you may want to get permission from upper management. After I escorted the process of modifying and unifying a CAD standard after a merger of three firms, I asked the president of the firm to publish the standard. I drafted a memo about the standard and its use and when it would go into effect and the president signed it and sent it out. Now that I had the presidential mandate to use the standard, I could move ahead even in the face of resistance because I have the approval and permission from the uppermost court of appeal. By getting the president to back me up, it defused resistance and those who were reticent to change. I would just tell those opposing the change that we could go talk to the president if they wanted.

Know your exchange rate

The best way to improve your exchange rate is to study your character and how you

have provided leadership in the past. Do you have a positive track record of success? Have you built upon good planning and execution so that people trust your ideas, plans, and perspectives? Success breeds more success. Start with small successes and build upon them. Remind people of the past success you have achieved. Ask for their help to move forward.

Sometimes you have to exchange favors to get some movement on difficult issues. First make sure that the exchange rate is in your favor. By this I mean that you should have developed some allies or gone the extra mile so that folks seem indebted to you. By extending extra effort to some users and getting them on your good side, you can call on them to "go along" with you on some change issues.

Make it happen

Now is when you begin to work your plan, put in place the change, and get people to move forward. The focus of this article is not to discuss the actual planning of the change; rather, how to manage the processes and people around the change. Since there are so many different items that could introduce change in your firm it would be difficult to define a process for them all. Your planning might include a step-by-step rollout for new software, a quick fix to a long-term problem, a change in project production, or even just an adjustment to the plotting process. Each of these needs planning and should be thought through from start to finish.

Settling in – stopping the change machine

Once the change has been made you need to solidify the new process or platform. You need to plan for stopping this change machine that you started. Change must be started and stop in a methodical manner. If you fail to stop the advance of the change process it may run ahead of you and the users may continue on without you.

Stopping the process includes verifying that the change has happened (are people doing things the new way?); getting people to police themselves (are others doing things the new way?); agreeing that it is an improvement (the new way is better!); and possibly providing feedback for minor adjustments (it might be even better if we…). It is good to stop the change and modify the process at regular milestones so that people know that they are not expected to constantly tolerate change.

Now comes the committee formation. If it is a large-scale change, such as a new CAD standard, you may need to create a standing committee to police the environment. This committee would oversee the use of the standard, enforcement of the guidelines, and report to you with feedback.

By firming up and creating a new status quo you will be setting the stage for progress and locking in the production improvements that you desired. But keep in mind that you will soon start this whole process over again on another issue that will generate change. Always keep in mind what the Greek philosopher, Heraclitus, said: "Nothing endures but change."

Mark W. Kiker is a member of the AUGI Board of Directors. He is the General Editor of BLAUGI and also publishes cadmanager.com, the CADD Managers Journal, and the caddmanager.com blog. He is currently Director of Technology for HMC Architects in Ontario, California, and can be reached at mark.kiker@augi.com

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New Releases Means Learning New Techniques

Can you believe another year has passed? We know that there's a new set of product releases from Autodesk® right around the corner. Before we jump into asking "What's new?" "What's cool?" "What's great?" and "How do I get the most out of 2007?" ask yourself this question: Am I taking advantage of everything in my current release to be productive?

Learn about the new features

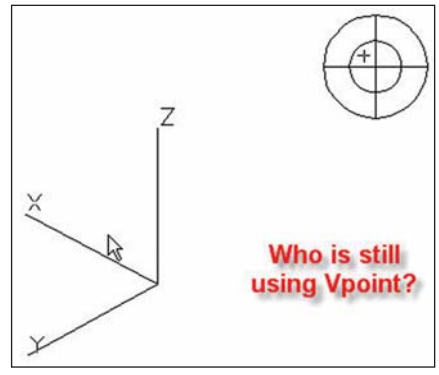
Here are a few simple questions you can answer to ensure that you're not only getting everything you need out of your current release, but that you'll get the most out of your future upgrade as well.

Are you porting old customization from older releases into the new software?

This is a common request that I hear from companies that have purchased an upgrade. "Before we install the upgrade we need to make sure all our custom programs and menus work." WHY? What they should really be saying is, "We need to evaluate the new software, because new functionality may have made our custom menus and programs obsolete."

Think about this. The last call has officially been made to move from AutoCAD® 2002 to AutoCAD 2006. Many will take advantage of the deals and discounts offered in upgrades and cross-grade promotions. Why would you make that upgrade and then force the new software to work exactly the same way as your former release?

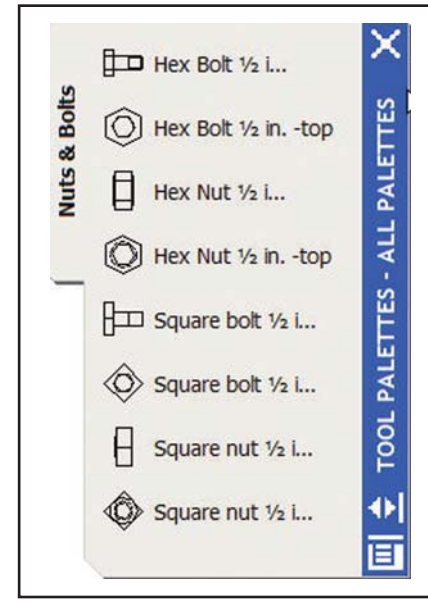
Fact is, companies spend thousands of dollars every year upgrading to the latest software release. But once the upgrade is installed, the users and designers force the software to look and work like the previous version. Hours are spent installing old menus and routines, thus disabling the new features that enable higher productivity.



Vpoint is a superseded command

Are you using superseded commands?

I know AutoCAD users who still draw construction lines (as if they were board drafting) instead of using Object Snap Tracking. They also use the Zoom and Pan commands or the scroll bars instead of the Intellimouse wheel. I've even seen people still using the Insert command to Browse…and place Blocks in a drawing instead of using Tool Palettes for single-click, drag-and-drop insert and easy management of their Block libraries. Imagine that!



Use Tool Palettes to access your Blocks

Why are they still using these old techniques? Often it's because they don't know about the new techniques! One drawback to AutoCAD is that Autodesk doesn't eliminate superseded commands. Maybe I could convince the programming team to add an annoying pop-up that says, "You're using an old command or method. Click here to learn the new and improved method."

Have you explored all the new features in your existing software?

The "What's New?" or the New Features Workshop dialog box is the first thing people see when they fire up the new version of the software. It's also the first thing they close. Why? Well, people seem to feel they just don't have time to learn something new or they are comfortable doing things the way they always have. We often don't like stepping outside our comfort zone. But taking a few minutes now

will translate into long-term economies of time. But even if you are informed about the new features, there's a difference between having the knowledge and applying it. Incorporating new functionality into your design process is not easy.

Once you know what the new feature is, you'll need to try it, apply it, and then adapt. When the temptation is to go back and "do it" the way you have always done it, you're going to have to change. We are definitely creatures of habit when it comes to using software.

Have you had a process-based analysis conducted of your current methods?

There are many people who still think that speed is the key to being productive when using design software. Speed has nothing to do with being productive. Becoming productive using AutoCAD or any of the Autodesk products consists of choosing the least number of clicks, picks, and keystrokes. Period!

The best way to become more productive is to have an expert who is an experienced trainer, has been trained by Autodesk-approved methods, and has mastered the software in its intended method of use. You can't figure this out on your own. Have a company analysis done of your current design process. If you jump into training, you may not get training and support materials that are applicable to the process and methods for your designers and company.

Have you developed an implementation plan to support your training initiatives?

Training in itself will not make you more productive. In order for training to be successful you need to distinguish between implementing a personal productivity plan and a company productivity plan. The personal one is the easier one.

A personal implementation plan means setting measurable objectives and goals for your training. It also means focusing on the aspects of the software that do not change the methods and standards of the company. For example, using Object Snap Tracking instead of using construction lines can be part of a personal productivity plan. Whether everyone uses it as a method to accurately create drawings doesn't matter.

A company productivity plan means a dramatic change to the company standard, practice, or method. For example, using Sheet Sets or Dynamic Blocks is a radical change in the company method and standard for printing and managing reusable content. To switch to these methods requires buy-in from management and even your IT department. This may not be easy to do. It is also the key reason why people are slow to adopt these radically different changes to the software.

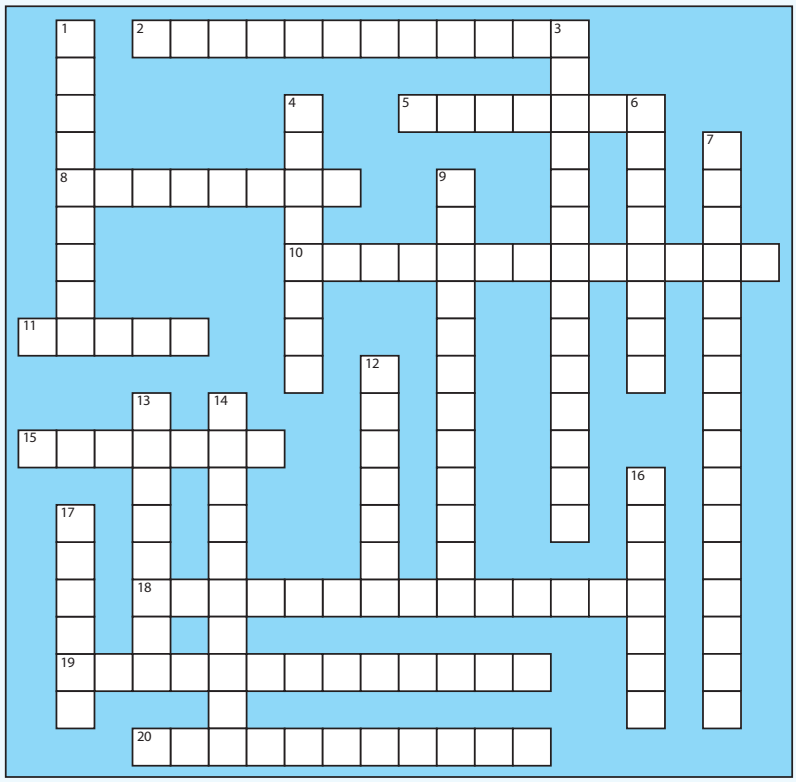
The key to an implementation plan is choosing which aspects of the new or existing software will be incorporated into daily use and what will not. The plan sets the stage for its incorporation and assurance that it's being used properly and effectively. This is the only way to get true productivity gains.

If you're looking for tips to deliver effective process-based training, go to www.AUGI.com and watch for my "Training the Trainer" articles in *AUGI HotNews*.

Until next time, don't close that new dialog box!

Matt Murphy is a member of the Autodesk Training Center Advisory Board (ATCAB) and a Certified Technical Trainer (CTT). He teaches AutoCAD productivity seminars at Autodesk University, AUGI CAD Camps and private companies. He can be reached at matt.murphy@ACADventures.com.

System Variables – AutoCAD 2006



Across

2. Controls whether drawing recovery information is recorded after a system failure
5. Specifies the user interface for editing single-line text
8. Sets the hatch origin point for new hatch objects relative to the current user coordinate system
10. Turns temporary override keys on and off
11. Gets the minimum speed of a smooth view transition, in frames per second
15. Determines whether or not the Drawing Recovery window is active
18. Sets the font used for parameters and actions in the Block Editor
19. Specifies the visual effect used for previewing selection of objects
20. Controls which tooltips are affected by tooltip appearance settings

Down

1. Controls the hatch origin of the resulting hatch when using Inherit Properties in HATCH and HATCHEDIT
3. Stores the CUI file name (if defined), including the path for the file name
4. Stores a value that indicates whether the command window is hidden or displayed
6. Controls when pointer input is displayed
7. Deletes excessive layer filters to improve performance
9. Combines drafting tooltips into a single tooltip
12. Turns Dynamic Input features on and off
13. Controls when smooth view transitions are used
14. Sets the duration of a smooth view transition, in milliseconds
16. Determines whether or not the QuickCalc calculator is active
17. Controls whether object snaps are automatically projected onto a plane parallel to the XY plane of the current UCS at the current elevation

Answers on page 28

Taking Design Further with AutoCAD 2007

It was just about a year ago that I sat here, working on an article about the new features in AutoCAD® 2006. Here I go again, only this time my focus is AutoCAD 2007. And just as AutoCAD 2006 introduced some nice new features, including one that everyone heard about for sure—the CUI editor—AutoCAD 2007 delivers many new enhancements and features as well. Many of these features revolve around a single theme and that theme is design—specifically 3D design. Much of this new release targets 3D modeling and rendering, but for those of you who use 2D, you will find some nice new additions, too.

Environment changes

When you first start up AutoCAD 2007, one of the things that you will notice is that a new dialog box is displayed, which allows you to select from the different workspaces available. AutoCAD 2006 shipped with a single workspace called AutoCAD, which is now known as AutoCAD Classic. Keeping with the 3D design theme, a new workspace called 3D Modeling has been introduced in this release. This new workspace helps you get fully immersed in the new 3D design features.

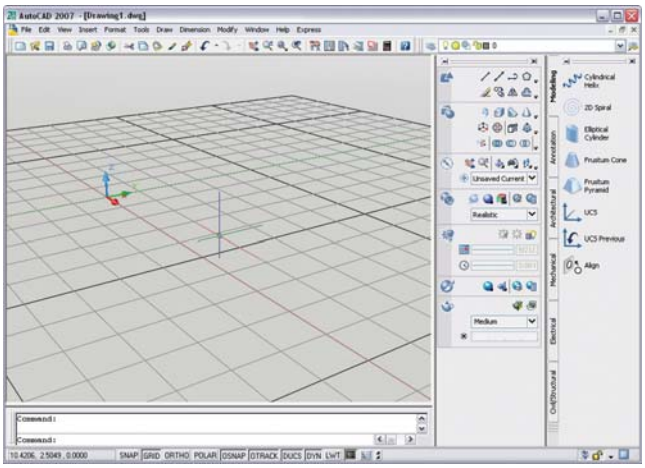


Figure 1: Drawing window pumped up for 3D design, and yes, that is the grid.

Figure 1 shows several of the new enhancements in the AutoCAD drawing environment. Some of the enhancements include grid updates for working in 2D and 3D, the ability to turn off the layout tabs and still be able to access them from the status bar area through a new set of controls, a smaller Standard toolbar, and the Dashboard. The Dashboard is used to access not only 2D and 3D commands, but also various settings that are used for viewing and rendering a drawing. The Dashboard is shown in Figure 2.

Figure 2: Dashboard is not just something in your car

Design tools boost productivity

In past releases of AutoCAD, you could pretty much count on the 3D features not being changed. After all, AutoCAD was being pushed primarily as a 2D solution, and if you wanted 3D in your designs you would most likely use other Autodesk products such as Architectural Desktop or Mechanical Desktop. So, except for minor changes here and there, 3D in AutoCAD has remained status quo for several years.

AutoCAD 2007 changes all that. The software introduces many new commands that are designed to help with the creation of 3D objects. These commands are Helix, Pyramid, Polysolid, Planesurf, Sweep, and Loft. Sweep and Loft are powerful commands that allow you to turn 2D objects into complex 3D objects very quickly. If you have used applications such as Autodesk® VIZ, Autodesk® 3ds Max®, or Autodesk® Revit®; you are probably familiar with the sweep and loft tools, which are great for creating trim (moldings), bent tubing, and hand railings.

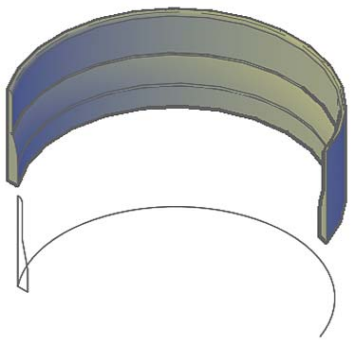


Figure 3: Sweeping 2D objects to create 3D objects

Having the ability to create new 3D objects is great, but being able to position those 3D objects accurately in 3D space provides an even bigger boost in productivity. Object Snap Tracking has been improved for working with coordinates beyond X and Y.

Helix – Allows you to create a 2D or 3D spiral.

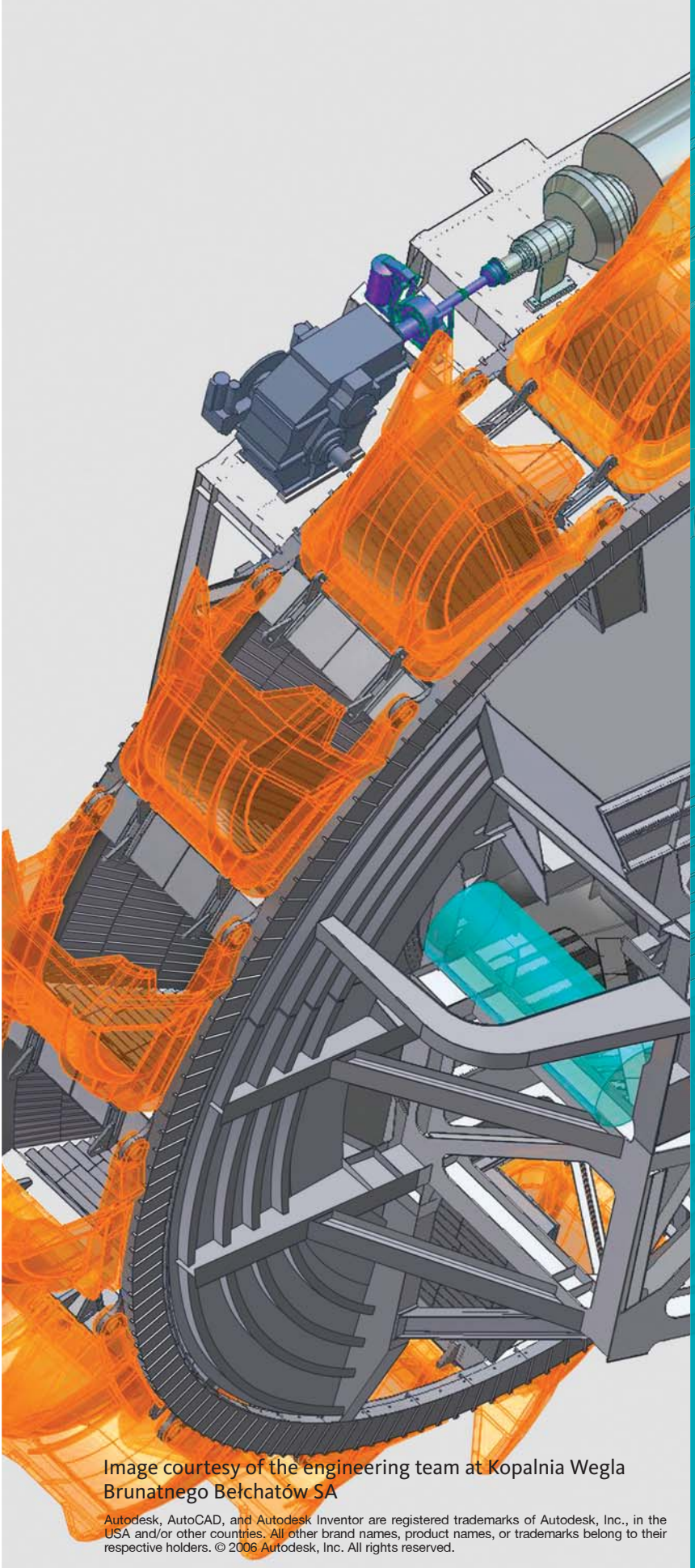
Pyramid – Allows you to create a 3D pyramid object.

Polysolid – Allows you to create a polysolid object that can be made up of lines, 2D polylines, arcs, or circles.

Planesurf – Allows you to create a planar surface.

Sweep – Allows you to create a 3D object along a path based on a 2D profile.

Loft – Allows you to create a 3D object by lofting two or more 2D profiles through each other.



Autodesk®

Where will your DWG drawings be when you move to 3D?

Idea:

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Beyond 3D object creation

AutoCAD 2007 offers improvements not only in creating 3D objects, but also in modifying 3D objects. New 3D editing commands introduced in this release are: 3DMove, Xedges, ConvToSolid, and ConvToSurface. Along with these new commands comes the ability to edit 3D objects directly with grips and edge and face selections. Figure 4 shows the different types of grips that are available for use when a Pyramid is selected.

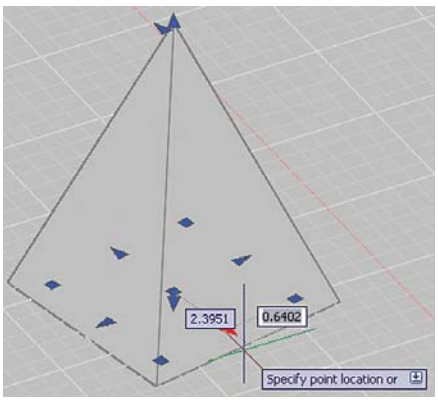

Figure 4: Solid editing via grips

While 3D objects could be edited in AutoCAD 2006 by selecting edges when certain commands were used, they could not be edited through direct selection. AutoCAD 2007 allows for that. An edge or face can be selected on a 3D object with the use of the CTRL key. By selecting an edge or face on a 3D object, you are able to push or pull it in different directions to help mold and shape the object. Figure 5 shows the pushing and pulling of a face on a 3D Box.

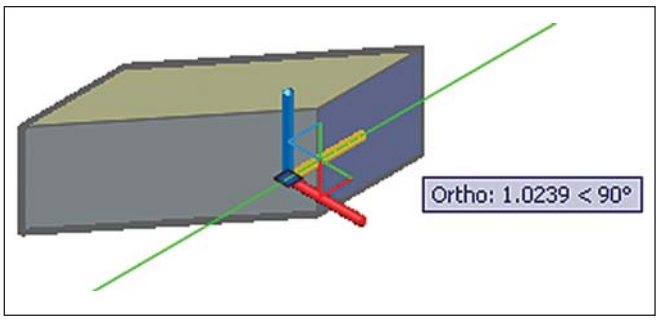

Figure 5: Pushing and pulling faces and edges of a solid is just a click away

3DMove – Displays the move grip to so you can move edges and faces on a 3D object.

Xedges – Allows you to create wireframe geometry by extracting the edges of solids or surfaces.

ConvToSolid – Allows you to convert closed polylines or circles with thicknesses to a solid.

ConvToSurface – Allows you to convert different objects to surfaces.

Going 3D to 2D… just like that

One of the great things about 3D is that it allows you to see the problem visually as you are designing. However, in the end the 3D design that you create needs to be placed on paper and dimensioned so that someone can manufacture and then assemble it. Even as much as technology has grown, the design still comes down to 2D and paper in the end.

AutoCAD 2007 introduces some new commands to help transition from a 3D model to 2D so that it can be dimensioned and annotated. These two new commands are SectionPlane and Flatshot. Figure 6 below shows an example of a 3D object and the results of using Flatshot with different angled views of the 3D object.

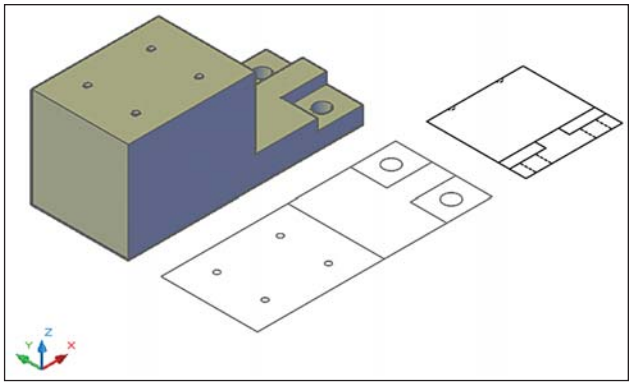

Figure 6: Flatshot helps to take 3D objects down to 2D objects quickly

SectionPlane – Allows you to create a section object that can act as a cutting plane through 3D objects.

Flatshot – Allows you to create a 2D representation of all the 3D objects in the current view.

Odds and ends

Besides all the changes in the area of 3D design in this new release of AutoCAD, there are other general design feature changes, too. Below is a round-up of some of the smaller, but noteworthy changes in this release that impact working with your designs.

Anchor Palettes – Do you often find yourself displaying and then closing the Properties palette because even though it is minimized it is still floating over your drawing window? AutoCAD now offers an option called anchoring that allows a palette to be docked and minimized at the same time.

Layer Express Tools Integrated – The Layer tools, by far the most commonly used Express Tools, are now part of AutoCAD, eliminating the need to install Express Tools if the Layer tools were the only ones you were using. That said, I still recommend installing Express Tools because there are other valuable tools that have not yet been built into AutoCAD.

Double-click Editing – The CUI editor now allows you to modify the commands that are used when you double-click on an object. So if you don't like the Enhanced Attribute editor popping up when you double-click on a block with attributes, you can now change this behavior.

An easy transition

If you have been putting off learning 3D in AutoCAD because it seemed complicated, you will find AutoCAD 2007 packed full of many new features that are well worth the upgrade. For those who are not into the whole 3D scene, AutoCAD helps to make the transition easy while keeping an eye on its heritage as a 2D drafting program. You will find that AutoCAD 2007 offers many enhancements for both 2D and 3D drafting.

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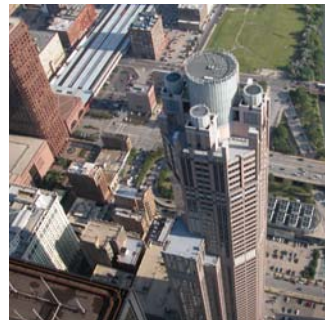

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Documenting and Sharing Designs with Others

One of the things that we learn early in life is to socialize and work with others. This socializing evolves into a give-and-take process and forms the basis for sharing. AutoCAD® allows us to use those skills by being able to document what we know and then share it with others. Sharing files with others from AutoCAD can be complicated at times, but the folks at Autodesk have made things a little bit easier with the release of AutoCAD 2007. In this article, you will learn about some of the great new features and enhancements that help to communicate design ideas and share drawing files with others.

DWF—not just for markups and viewing anymore

DWF has grown in popularity over the years with more and more people using it for collaboration. DWF files have made it possible to communicate design concepts fast and more efficiently. One of the benefits of DWF is that it provides a way to keep your drawings safe, because the files cannot be edited by others. However, this can then lead to problems when all you can obtain from a client is a DWF file, but you need to access the data from within AutoCAD.

AutoCAD 2007 fixes this problem by allowing you to reference a DWF file in a drawing, similar to an Xref. Once a DWF file has been referenced into a drawing it is called an 'underlay.' This underlay is limited to a read-only object and cannot be bound to the drawing file, but it does allow you to snap to geometry that is within the DWF file. This is usually all you need anyway! Figure 1 shows a drawing that contains a DWF underlay.

Of course to make all of this possible, some new commands and system variables had to be introduced. The new commands allow you to attach a DWF file, clip its boundary, toggle object snapping to geometry on/off, and some others that are used to control the appearance of the underlay. Below is a listing of the different commands and system variables that are introduced with DWF underlays in AutoCAD 2007.

Dwfadjust – Allows you to control the appearance of a DWF underlay once it has been attached to a drawing file. You are able to control the fade, contrast, and monochrome display properties of a DWF underlay.

Dwfattach – Allows you to attach a specific sheet contained in a DWF file to a drawing file as an underlay.

Dwfclip – Just like the Xclip command, the Dwfclip command allows you to control how much of the sheet that is referenced in as the DWF underlay is displayed in the drawing.

Dwfframe – Controls the behavior of the frame that appears around a DWF underlay. A value of 0 means it is not displayed or plotted, 1 means the frame is displayed and plotted, and 2 means the frame is displayed and not plotted.

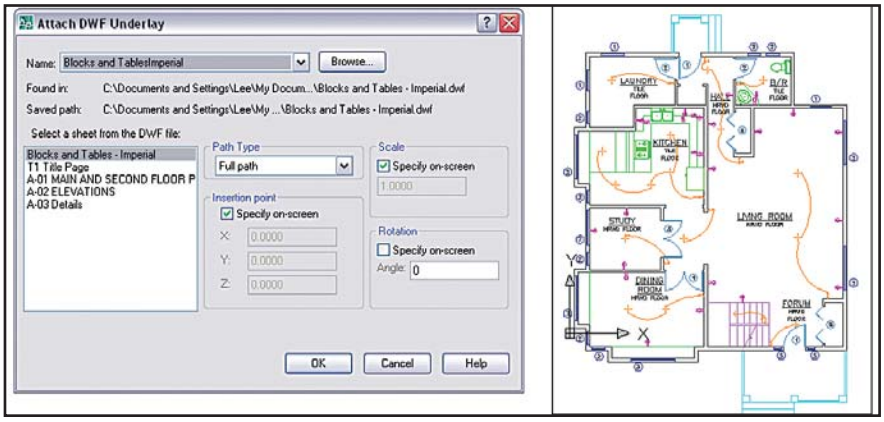

Figure 1: The ability to reference a DWF file makes them much more powerful

Dwfosnap – Controls whether or not geometry in a DWF underlay can be snapped to using object snaps. A value of 0 means that the geometry can't be snapped to, while a value of 1 means that you can snap to objects in a DWF underlay.

External referencing made easier

External referencing is one of those topics that everyone has to deal with at some point in time, whether you add external references to a drawing yourself or you receive a file that contains them. External references are commonly called Xrefs and they refer to AutoCAD drawing files that were attached/linked into another drawing. The term External Reference really means much more than that in AutoCAD 2007.

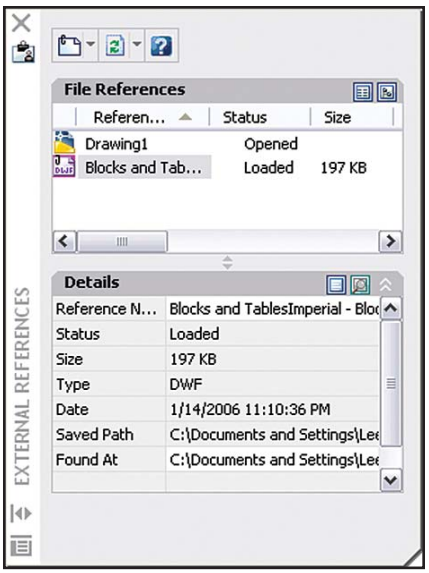

Figure 2: External References palette provides a place for one-stop reference managing

In this new release, the term Xref now includes drawing, image, and DWF files. Past releases supported attaching drawings and images through different dialog boxes and commands. AutoCAD 2007 simplifies the process as well as the number of different tools that you need to learn in order to manage external references. A new External References palette has been

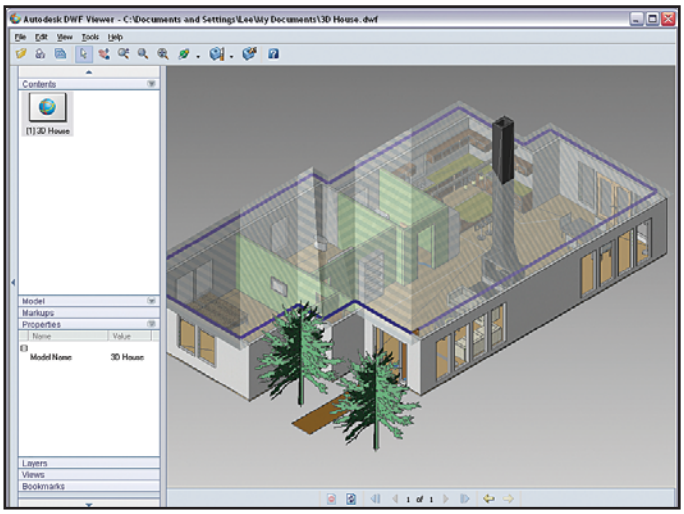

Figure 3: 3D DWF provides the ability to share lightweight 3D representations of a design

introduced that allows you to manage all the attached drawings, images,. and DWF underlays in one place. Figure 2 shows what the new External References palette looks like.

Sharing files with non-CAD users

For many years DWF has been the electronic file format of choice by Autodesk for sharing concepts and designs created with its various products. Some AutoCAD users, however, want to offer their clients an electronic copy of the drawing in Adobe's PDF file format. In this release, Autodesk satisfies these users with the ability to generate a PDF file from AutoCAD. A new feature called DWG to PDF.pc3 has been added to the program and is available from the Plot and Publish commands.

Even though the ability to generate a PDF directly from AutoCAD is available, don't think that Autodesk has forgotten about DWF at all. An improvement to DWF now gives you the ability to view 3D objects created in a drawing file. This feature was a preview feature with AutoCAD 2006 and is now part of the program. Figure 3 shows a 3D DWF file in DWF Viewer.

Odds and ends

Below are descriptions of some of the smaller, but noteworthy changes in this release that impact sharing and documenting your designs.

Cell Formatting for Tables – It is now possible to format cells in tables like you can with MS Excel. This feature allows you to format cells to display following the guidelines for specific data types such as angles, text, and numbers (whole or decimal).

Text Improvements – You can now specify different locations in which to add text objects while in the DTEXT command. This fixes some of the legacy behavior that was lost with the last release. When editing and creating multiline text objects that appear very small on screen, they are now displayed at a fixed width.

Fields – Fields now support the ability to use values stored in LISP variables.

Dimensioning – Changes with dimensions fill in some of the system variables holes created in past releases when masking, arc length, and fixed- length extension lines were introduced. Some of the new system variables are DimArcSym, DimFxL, DimFxLOn, DimJogAng, DimTFill, and DimTFillClr.

File Format Changes – In order to deliver some new features, AutoCAD 2007 breaks free and delivers a new file format as well. You will be happy to hear that you can still save down to AutoCAD releases 2000 through 2006; the ability to save back to AutoCAD Release 14 has also been added.

Any new release that brings improvements in the areas of sharing and documenting designs is welcomed. Just the ability to generate a PDF file from this new release for clients who demand it is probably worth the upgrade. Add to that all the other items that have been improved and it makes this upgrade even sweeter.

Submitted by Lee Ambrosius

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Visualizing Designs in a New Way

AutoCAD® is designed to help you create accurate drawings with both 2D and 3D objects. With AutoCAD 2007, you can take those drawings and turn them into great presentations. In the past, AutoCAD allowed you to create drawings and render them out, but it was often a painstaking process. Creating and assigning materials was a pure art form in previous versions of AutoCAD and other advanced techniques such as lighting to give your rendering added depth made the challenge even more formidable.

To simplify the task, many companies did their designs in AutoCAD and then imported them into a product such as Autodesk® VIZ or Autodesk® 3ds Max®, among others. However, utilizing another program for rendering AutoCAD drawings added costs that could include specialized personnel, additional software, and training. Many companies were unwilling or unable to justify these costs, but wanted to be able to provide the service to their customers. The good news is that Autodesk has listened to all these concerns and has improved the visualization and rendering capabilities in AutoCAD in a large way in this newest release.

The rebirth of visualization

AutoCAD 2007 takes leaps and bounds beyond what AutoCAD 2006 offered in the realm of visualization and rendering drawings. When Autodesk decided to redo this area of the program, no command was left untouched. The Dashboard is the main portal for accessing many of the new rendering, materials, lights, cameras, and navigation features. Along with the Dashboard, a number of other palettes and features have been introduced with this release to improve workflow when creating visualization from AutoCAD. Figure 1 shows a crude drawing with some of the different types of materials that can be created from AutoCAD and used in renderings.

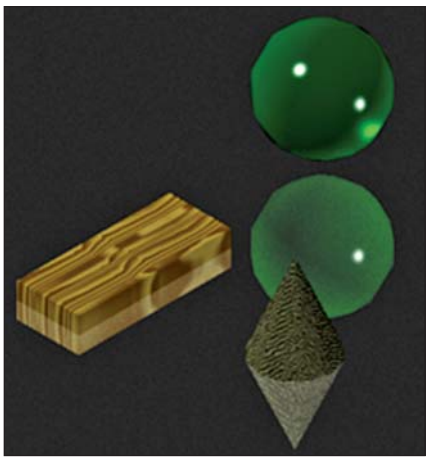

Figure 1: Materials and rendering from AutoCAD

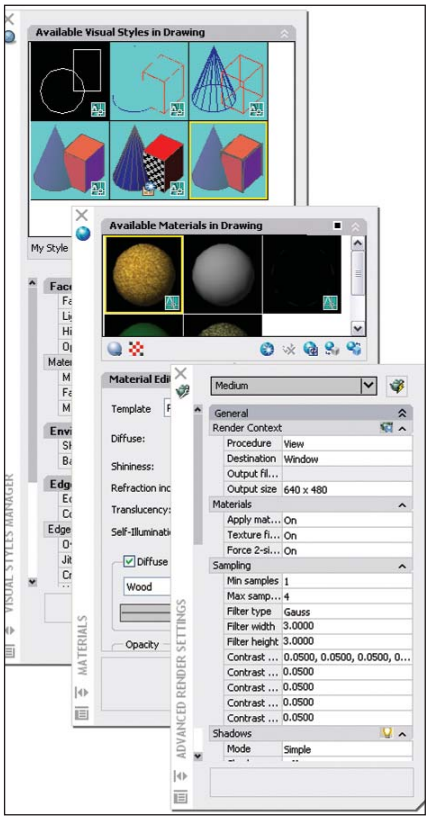

Figure 2: There are lots of new palettes to work with in AutoCAD 2007

UI upgrade for visualization

All of the older dialog boxes for working with the different components of visualization and rendering in AutoCAD have been streamlined into palettes. The new palettes have been added for lighting, materials, rendering, and visual styles to name just a few. Figure 2 shows some of these new palettes. Some are designed only for making changes to elements such as materials and lighting, while others provide control of rendered output. In order to create and use some of the new visualization enhancements, you can take advantage of pre-created tools on palettes that have been added to the Tool Palette window. These new palettes allow you to drag and drop lights, materials, and cameras into a drawing.

Viewing in a whole new way

AutoCAD 2007 features some nice enhancements that give you added control and movement through a drawing. These changes include the View dialog box, which takes some of the settings that are specific to viewing a design in 3D and makes them part of a named view. In order to help get to the view you want to create, you will find yourself tapping into some of the new navigation enhancements.

There are three new navigation tools that stand out in this release: Walk, Fly, and Free Orbit. Walk and Fly allow you to establish a view using the keyboard or mouse and then utilize a palette called Position Locator to fine-tune the view in the current viewport. Free Orbit is similar to the older 3D Orbit command, which is now called Constrained Orbit, with some minor control changes. Figure 3 below

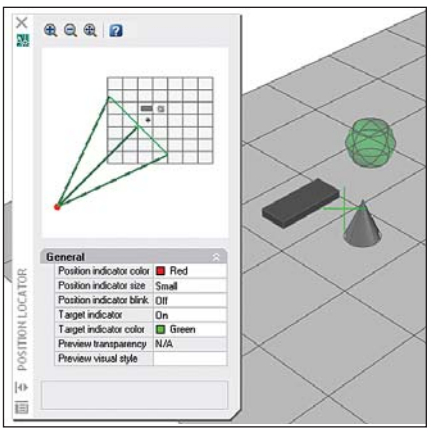

Figure 3: Taking your 3D design for a walk

shows the new Point Locator palette that is used with the Walk and Fly commands.

Getting the right look

Rendering a drawing file is all about getting the right look and AutoCAD 2007 allows the artist in you to emerge. In the past, AutoCAD offered up very specific looks to 3D objects from hidden line, shaded, and rendered. AutoCAD 2007 gives you a much larger palette of options in the visual department. Sure, you still have rendering and hidden lines, but now you can make things jitter and have overhangs. Jittering and overhangs give a drawing a more conceptual look and feel, resembling a free-hand look. Think of it… it has only taken a couple of decades for us to migrate from board to CAD, and now we have the ability to make AutoCAD drawings look as if they were done on the board. At least you don't have to worry about pieces of eraser getting on your drawing! Figure 4 shows some of the different types of visual styles that are offered in AutoCAD.

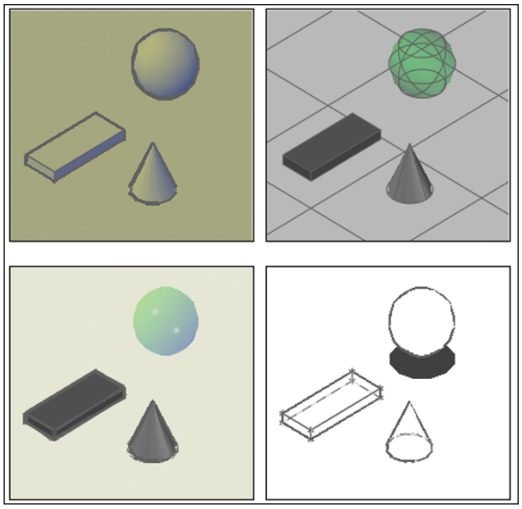

Figure 4: Varying the look of a 3D design with Visual Styles

Directing a scene

Visual styles allow you to control how the objects might look when plotted through a viewport, but for full control you will find yourself using materials, lights, and cameras. Materials allow you to give your objects real-world color and textures in the form of woods, paint, or glass. They help bring depth to a rendered design.

Lighting is important to help bring shades and variations in color to a 3D design. In the real world, everything is not all the same color as the object gets further away from its light source, so lights in a drawing help to give the same effect. Cameras are used to control what is displayed in the output when it is rendered. A camera can control things such as lens depth and focal points, which can bring the users attention to something specific in the drawing. Figure 5 shows a simplistic design with a couple of 3D objects, a camera, and a preview dialog box of what is being shown through the camera.

Sharing a rendered design

I have touched on improved navigation, visual styles, lights, and some other things. Those are all great, but in the end you need to share the final result with some one. Well, as in previous releases you could create a viewport and print out what is displayed in that viewport. This allows you to get your drawing to someone to be viewed via a DWF or PDF file electronically. You can also take the output that goes to the Render dialog box and save the image directly to a file. A rendered image can be saved to one of several common image file formats including BMP, JPG, TIF and PNG, among others.

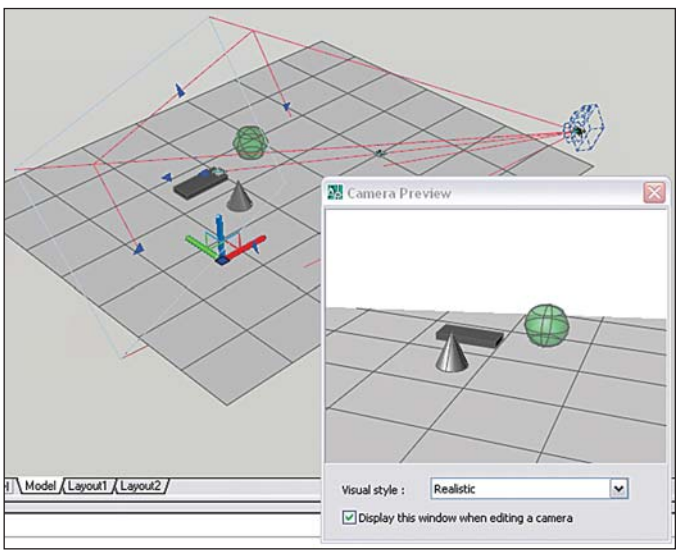

Figure 5: Cameras are used to visually create a view in a drawing

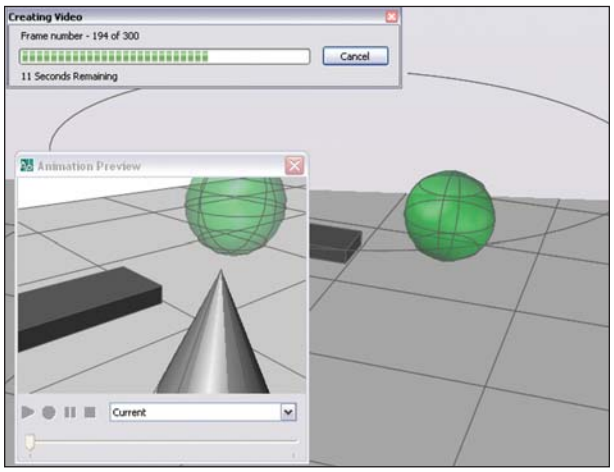

Figure 6: No more slides and scripts to simulate animations in AutoCAD

So, there's nothing new here, right? Not so fast. AutoCAD 2007 allows you to create animations (yes animations) of a drawing. It is possible to animate a camera in a drawing along a path to show the different parts of a design or a walkthrough of a building. The setup is pretty straightforward and the output can be specified to one of the four supported file types: WMV, MOV, AVI, and MPG. It would have been great to see a way to output to Flash, but that is something to ask for in the future. Figure 6 shows the creation of an animation in AutoCAD.

Good looks made easy

All the new enhancements for working with 3D objects are great for helping to improve the design process, but having the ability to effectively communicate those designs brings the program to a whole new level. AutoCAD makes creating 3D designs easy now; to have an equally easy way to take those objects and render them out is icing on the upgrade.

With a small learning curve for the new visualization and rendering tools, everyone should feel like they can turn out a good-looking rendering in no time. If your company does concept drawings and renderings for projects, this release will definitely improve workflow by keeping the design and rendering in the same program. And if you haven't done this before now because the process was too hard, that is happily no longer the case!

Submitted by Lee Ambrosius

What is the horizontal approach?

This month's columnist, Jim Balding of WATG, trains architects and designers in Autodesk Revit. Here he warns against trying too much too soon

Now that Autodesk® Revit® is beginning to really take off, the number one question I get is, "Where do I start?" As with any other task, technology-based or not, we all should start with baby steps. You need to walk before you can run. When it comes to implementing Revit, many people I have talked to seem to believe that there is no walking. It is a 3D modeling tool and you need to model everything to get the value out of it. I propose otherwise—I propose the "Horizontal Approach."

The Horizontal Approach simply dictates that: 1) anything to be published in the horizontal plane (plans, enlarged plans, area plans, and schedules) is produced by Revit; 2) Vertical elements—sections and elevations—are produced using the traditional methodologies in the current workflow process—by hand, CAD, or otherwise—and linked into Revit. The horizontal approach can be applied to a project as a whole or to a specific phase of a project. Wimberly Allison Tong & Goo (WATG) employees use the horizontal approach to all projects during the concept and schematic design phases, with full modeling beginning at the end of schematic design and through design development and construction documents.

For those of you thinking, "That is crazy" or "Where is the value in that?" consider this: the intent of the traditional conceptual design phase is to organize a design program into spaces represented by areas and rooms while elevating the building to show design character. While these two communication deliverables would ideally be fully coordinated and work perfectly, let's face it, they never do. There are countless instances where designers have spent a multitude of hours making a roof work or model the perfect window only to have the roof change dramatically and the window removed from the design. All that work equates to wasted time.

Using the horizontal approach, you quickly create concept plan layouts—walls, doors, and windows, along with areas, but do not develop elevations or sections in Revit at this project phase. You have the added value of a coordinated set of drawings as Revit manages tags (for schedules) and links. This means a smaller toolset to learn and master, which is beneficial to those individuals and firms just beginning their implementation. All of this adds up to a pretty strong argument for the horizontal approach early in the design process.

The horizontal approach in action

Putting this to work for you is a relatively simple task. Let's take a very simple three-story office building as an example and start with a simplified schematic set of deliverables. Our sample set will include seven sheets—three floor plan sheets, one roof plan sheet, two sheets of elevations and sections with one sheet for area plans. We are ignoring cover, title sheet, and other sheets for simplicity. Let's assume that your team is two people—one designer and one technical staff. The designer (assigned the design of the building) will be focused on the elevations and sectional information for presentation while the technician will lay out floor plan items that will be presented through Revit. The designer's tool of choice will have no effect on the plans, so hit the ground running. Lay out all the walls, carefully aligning to the established grid. Pay attention to the heights of walls, but not necessarily any ornamentation or finishes.

Use generic Revit content to put in fixtures, doors, and windows at this time, which can be swapped for custom objects later. In our sample (available online) there are curtain walls with mullions. This means you will work in elevation/3D, but don't go too far. You might be tempted to model in 3D where it will be better not to, using the railing tool for the railings for example. If you can resist these temptations you will find that you will save time and be more successful in this approach.

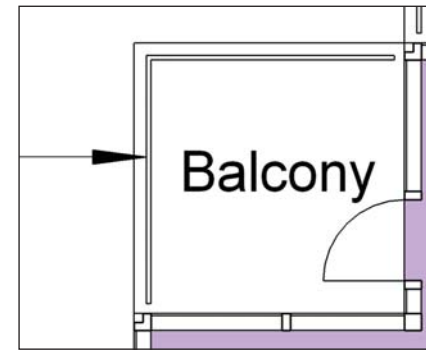

Figure 1: Plan

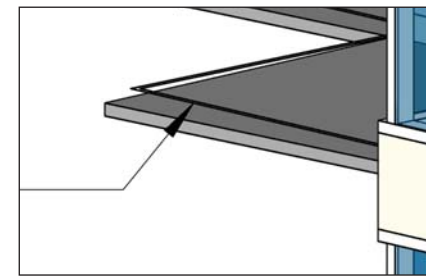

Figure 2: 3D View

Figure 1 – Balcony Railing shown with 2D lines—communicates the idea and location of a railing without building the entire railing.

Once plans have been laid out, the next step is to get elevation and sectional drawings into the set. Because Revit does such a great job at coordinating the set, we will let it do the work. For our sample we will assume that the designer is working by hand. Open an elevation view, import in

the image created by the designer, scale it to the appropriate size, and place it right over the top of the model. Now open the visibility graphics dialog and uncheck the "Show model categories in this view" checkbox.

Repeat this process for all the elevations and sections in your project. Create area plans using Revit's area tools; don't forget to create area schedules at this phase. Once this is complete you can set up all of your sheets and you now have a set of schematic design drawings using the horizontal approach.

Figure 3 – Use Revit to publish the "horizontal" plans and coordinate elevation information. Revit notes were used for text on elevations in this figure.

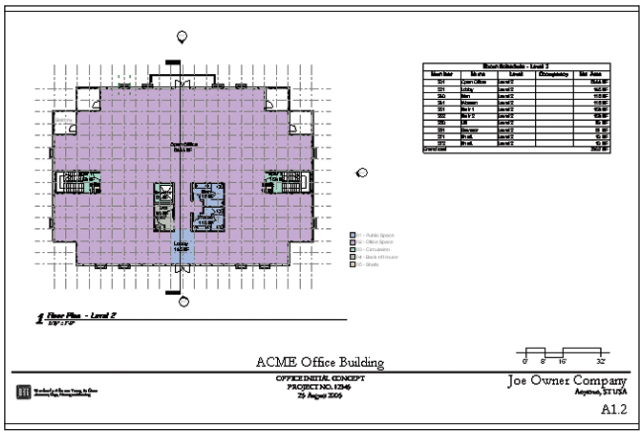

Figure 4

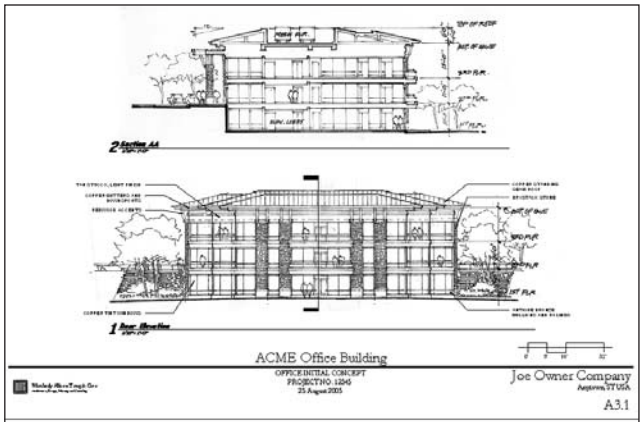

Figure 5

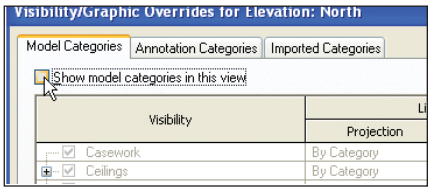

Figure 3: Uncheck model categories for the elevation views

Wrapping up

In summary, the use of the horizontal approach in the early stages of design and implementation is beneficial for two reasons. First, there are fewer tools to learn for the new users. Second, the elevations and floor plans are in a constant stage of flux and maintaining a full model during the early stages of design is next to impossible. Of course the level of confidence and experience will also dictate the amount of 3D modeling that is undertaken in each phase.

Naturally you will find variations on this approach and you might modify it to fit your practice. By all means, go for it. It should also be noted, this process is predicated on delivering the traditional deliverable packages—plans, sections, elevations, etc. As BIM acceptance and 3D design gain popularity, the deliverables will undoubtedly change and this process will evolve along with it.

The sample office building (Figures 4 and 5) has been posted for your reference at https://projectpoint.buzzsaw.com/watg/WATG_Public/AUGIWorld/AUGIWorld.rvt?public. Please feel free to use it as an example of the horizontal approach. Areas of note where time was saved using this approach can be seen on sheet A4.2, most notably the lack of exterior detail, the lack of any floors, and the exclusive use of generic content. All design copyrights remain property of WATG.

James J. Balding, AIA, is a licensed architect and the Director of BIM Implementation at WATG. Jim is the AUGI Revit Product Chair and co-author of Introducing and Implementing Autodesk Revit Building *(Autodesk Press).*

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Warning! Graphic Language

Creating graphs based on tables in AutoCAD 2006

We have AutoCAD® 2006. Good. We have formatted text including numbering and bullets. Good. We have tables. Good. We have graphs based on those tables. Oh wait! No, we don't. What do we do when we need to graph the information in a chart? We take a little trip, outside the box.

We start in Microsoft Excel with something familiar. The following table shows the values for sine and cosine.

The information in the table can be graphed in Excel. From the Insert menu choose Chart. In the Chart Wizard there are many options for graphs including bar, line, and radar. Choose line on the left panel and a variety of line charts appears on the right. Some appear as lines only, others as lines and data points. One actually looks 3D! Wouldn't that grab your attention in a set of plans? But for this example we will use lines only.

Sine	Cosine		Angle
0	1		0
0.7071	0.7071		45
1	0		90
0.7071	-0.7071		135
0	-1		180
-0.7071	-0.7071		225
-1	0		270
-0.7071	0.7071		315
0	1		360

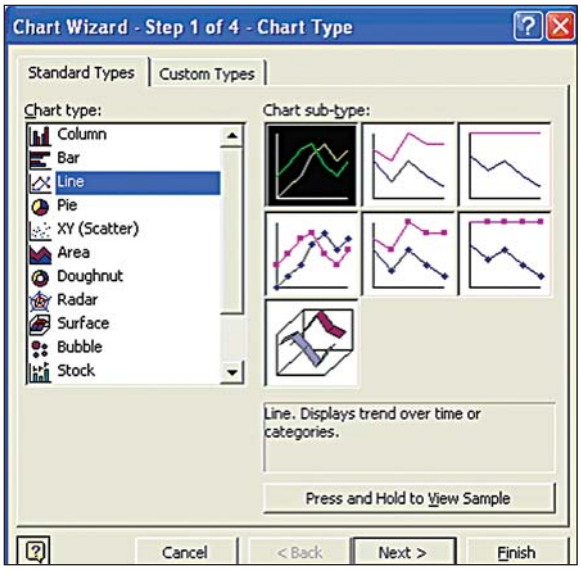

Figure 1-Excel chart wizard

Click Next. In the next dialog box we want the Series tab, so that we may choose what is to be graphed. There are three places to add data to the chart in this dialog box. The Series Name, the Series data values, and the X Axis category. In our example the Series names are Sine and Cosine. The values for Sine and Cosine are the values listed below them respectively. The X Axis are the Angle values. The button that resembles a chart with a red cursor arrow is used to pick the data for the Series name, series values, and X axis. At the right each of the fields.

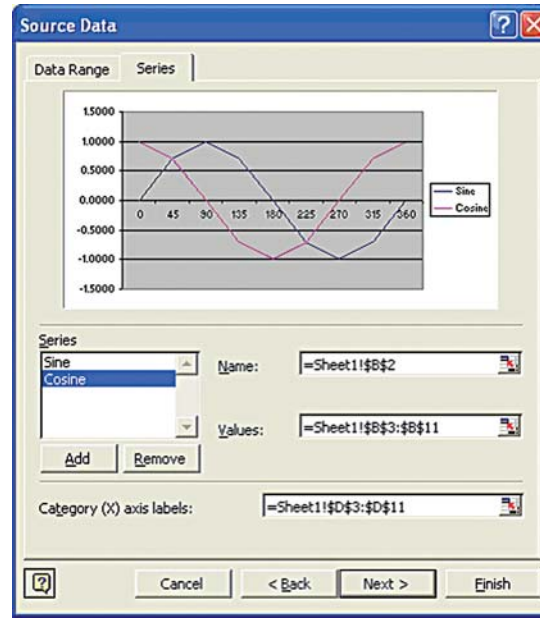

Figure 2-Chart wizard continued

Because we have only one table, the chart wizard tries to figure out what is to be graphed. There are all sorts of series already created. Remove them. Next add the Sine and Cosine series and the X-axis values as described above. The dialog box should look like the one in Figure 2.

You know it's right if the sample pane shows the familiar sine and cosine wave from 0º(zero) to 360º. Click Next. In step 3 of the Chart wizard you can add grid lines, move the legend or remove it altogether, add a chart title, and you can even add the chart values themselves. In the titles tab add the chart title Sine-Cosine Wave. Add the word Angles in the X-Axis title. In the Axes tab make certain the primary X and Y axes are checked. Play around with the rest of the settings to see the results in the sample. Go ahead, I'll wait. (Humming and bobbing my head while waiting.) OK… ready to move on?

We are almost ready to cut and paste the graph into AutoCAD. First, however, we must format a few items. Most importantly, the actual lines of the graph

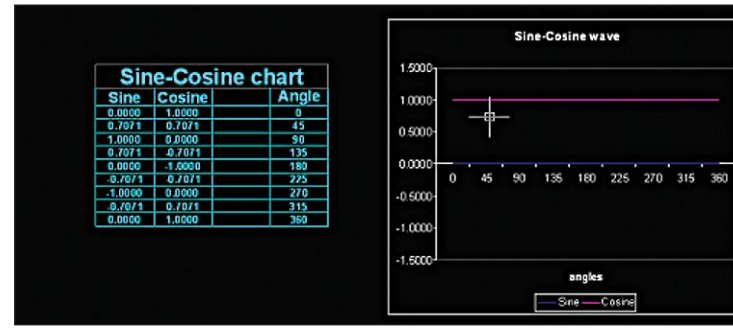

Figure 3-Sine Cosine wave unformatted and pasted into AutoCAD

must be smooth. If we don't format our lines to be smooth this is the result in AutoCAD (see Figure 3).

Your sinuous curves are straight as a scale! To format the lines, click on them. Grips appear on the object selected. Right click and choose Format Data series. Once again we are given a host of formatting options. In the Patterns tab we want to check the box for smoothed lines. Format the Sine and Cosine curves. You can see also that we can change the color, the line type, the width, and more. There are two areas of the chart that have a fill pattern—the Chart area and the Plot area. They show up as rectangles when you paste them into AutoCAD (see Figure 3). The most obvious one is the Plot area since it matches the data dimensions of –1.5 to 1.5 and 0 to 360. You can remove them by formatting these areas and setting the Border and Area to none. Once these items are formatted to taste it is time to import the chart into AutoCAD.

I'm going to say it, I don't care for OLEs. They don't auto-rotate when plotted; they can't be scaled correctly; they look different than the rest of the drawing. They just don't work for me! If you like them, go ahead and use OLEs. Me, I'd rather have AutoCAD entities.

In Excel if you highlight the graph and Copy it, it may seem that you can't paste the graph in as AutoCAD entities. And that is true—IF you highlight the graph and COPY it! The only choice you have is OLE object. However, if you hold down the Control key while highlighting the graph, the objects can be Copied and Pasted as AutoCAD entities. You know the selection is correct if the grips in Excel are white. To Paste the graph into AutoCAD as AutoCAD entities use Edit>Paste Special>AutoCAD entities, Figure 4 shows the result.

You'll discover that the graphed lines are not one entity. The example in figure 4 emphasizes this by highlighting one of the entities. It is especially clear, because the line was formatted as a dashed line in Excel! Also the line weight used in Excel translated poorly when pasted into AutoCAD. The lesson here, kids, is to leave the line typing and line weight alone in Excel. Format it in AutoCAD instead.

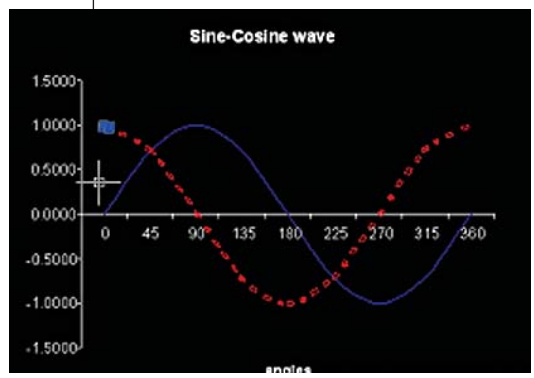

Figure 4-Graph pasted in as AutoCAD entities

The Sine wave (in blue) can be joined together as a polyline. The Cosine wave (in red) can not.

Time to wrap this up. We've solved the riddle of creating graphs in AutoCAD. We created our graph in Excel and formatted it to create smooth lines. We then copied it out of Excel and pasted it into AutoCAD as an OLE and as AutoCAD entities. Along the way we learned to avoid some of the pitfalls I discovered when developing this technique. Finally we learned that I don't like OLEs. After all you can't scale OLEs to an exact measurement; you can't add leaders to OLE objects; you can't format the text of OLE objects to match the rest of the drawing. And don't forget the pesky upside down OLE that occasionally rears its ugly head. But, hey, if you like them then you have my best wishes. I'll leave you with a little treat to close my article (Figure 5). Attention grabbing, isn't it?

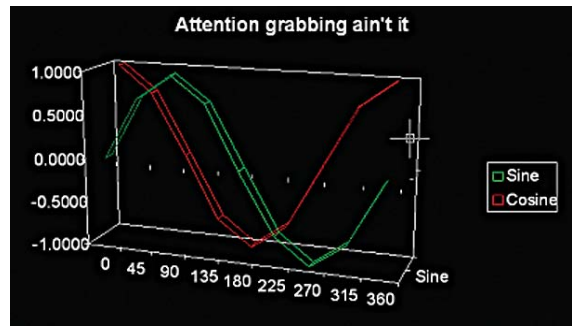

Figure 5-3D Sinuous waves

Norman Dixon is a self-taught AutoCAD draftsman and AutoLISP programmer. He has more than 12 years experience in civil engineering design and drafting, and five years experience in architectural drafting. He currently works as a design engineer for a civil engineering firm in Manassas, Virginia.

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In the Grip of Grips

Grips in AutoCAD have been around for a long time, but are you making the most of this feature?

When AutoCAD® R12 came out, one of the best enhancements Autodesk made had to be Grips. Not only could something be moved or stretched without first typing in a command, but all you had to do to discover if two entities touched was to click on them. And you didn't have to use OSNAPS to find the midpoints and endpoints of lines or quadrants or the centers of circles and arcs. Plus, you could pick an entity first, then type in or pick the command.

With AutoCAD 2006, Autodesk improved grips even more by adding Dynamic Input. At first glance, when you draw or grip an entity, the information shown on the screen seems distracting at best. You may even think, "Oh great, more eye candy." You might even be tempted to turn it all off. I recommend you leave it on and here's why. The numbers shown don't merely list information, but give you an opportunity to change the entity, either with the pointer or by keyboard.

Dynamic input uses

When you first type in or choose a command, next to the pointer you'll find the same prompt you normally find on the command line. This is especially useful for people like me who are accustomed to typing in commands instead of picking the icon or using the pull-down menus. Once the command is picked, you now see the X and Y coordinates of the pointer. Now this is the really cool part. Without having to use "@" first, you can type in the X coordinate, hit Tab, and then input the Y coordinate for your insertion or beginning point. But the coolness doesn't end there. For instance, in Figure 1, I'm starting a circle. Before picking my center point, I hit my down arrow, and the normal three options for drawing a circle appear. So instead of having to type "2P," etc., I simply hit my down arrow key until the option I want is highlighted with a small black dot.

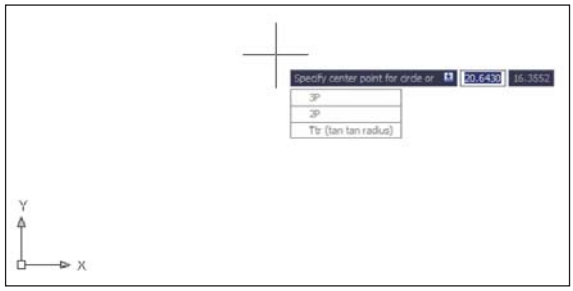

Figure 1

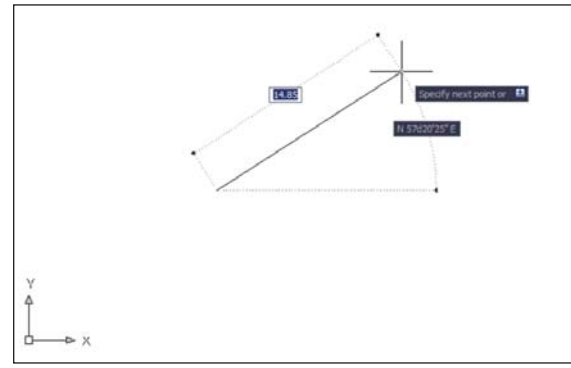

Figure 2

After picking your first point, the information shown depends on the command. Again, the text near your pointer shows the same information and options normally found in the command line. In Figure 2, I started a line. The information shown is the length and angle relative to 0°. The angle will never exceed 180°. Also, what you see is dependent upon your units setup. For instance, you'll notice my units are set up to two decimal places and Surveyor's Units. To pick the second point, you can type in the length, hit Tab key, and then input the angle. However, if you want to use X and Y coordinates, you will have to type "@" for relative or "#" for absolute coordinate input.

Now I have drawn two lines, but I don't like where they connect. So I grip them at the angle point. In Figure 3 you'll see two distances off of the right line. This shows the change in distance as well as the final distance. But I don't want that information. So I hit Tab until AutoCAD shows me the information I want. In Figure 3b, after hitting Tab five times, I now see the final length of my left line and its corresponding angle relative to 0°.

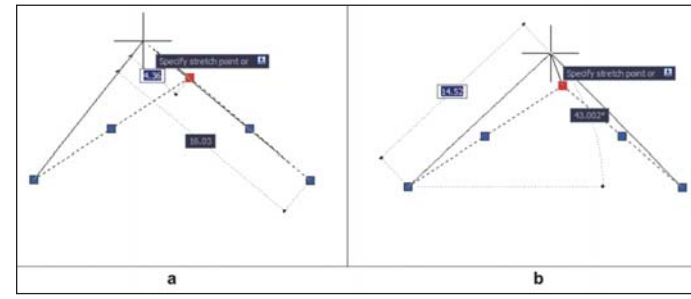

Figure 3

Here's another nice feature. Say you want to know the distance of a line. Instead of listing it with the List command, assuming you have the Properties palette enabled, look for the distance there and pick the line. Place the pointer on either one of the end points, but don't click on it. AutoCAD will list both your distance and angle. If it's a circle, it will list your radius, and if it's a polyline, it will show the distance only.

Dynamic input settings

Bringing up Dynamic Input Settings can be accomplished one of two ways. You can type in "DSETTINGS" or click on the "DYN" button at the bottom of the screen and to the right of "OSNAP". Like Osnap, Dsettings can be used transparently (see Figure 4).

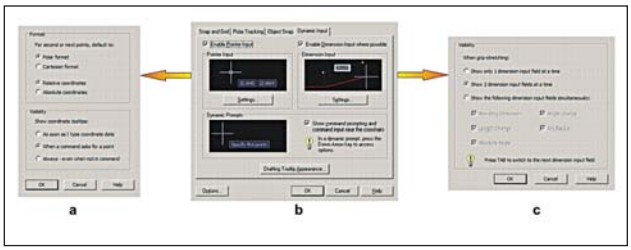

Figure 4

Figure 4b shows the dialog box, which is pretty self-explanatory. Clicking on the Pointer Input Settings will give you your formatting options. These options apply in moving entities such as in Figure 5. As for the Visibility, these will list your pointer coordinates in one of the three ways. Again, these are self-explanatory (see Figure 5).

For Dimension Input settings, you again have three options. Sometimes showing two dimensions of an entity can be too distracting, so you can change it to the first option and show the distance or angle only. If you like to see only certain fields all the time, click on the third and pick the fields you want. With this feature, however, pressing Tab will not toggle through the fields as described in the previous section and shown in Figure 3. Once you've chosen the settings you like, you are ready to close out the dialog boxes and begin or continue your drawing.

I've only described the most obvious uses for AutoCAD's new Dynamic Input. If you thought grips were versatile and

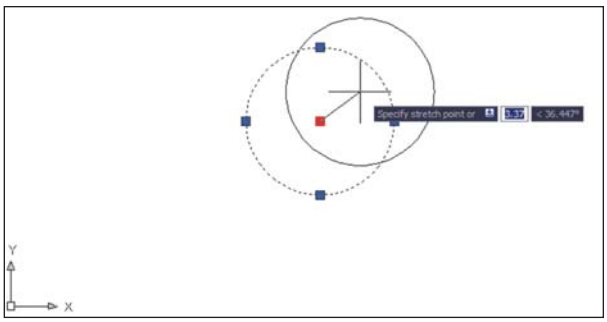

Figure 5

increased your efficiency before, imagine what they can do for you now. Once you get a feel for how they work and their capabilities, you may discover you can't work as well without them. Plus, having much of what you're accustomed to seeing in the command line now near your pointer will help relax the eyes as they won't be jumping from one part of the screen to the other. You can remain focused on the pointer and your drawing—where all the action is.

Andra Marquardt works for Toman Engineering Company, a civil engineering firm. She is a Registered Land Surveyor in the State of North Dakota and holds AAS degrees in Civil Engineering Technology and Drafting and Design Technology. She has been using AutoCAD since 1991 beginning with Version 9.

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Turn the page...

Are You Limited?

Are Limits one of those AutoCAD commands that has outlived its usefulness? We invite your comments

With each new version of AutoCAD® there are more commands to delight (and perhaps confuse) users. While ever increasing the power and versatility of this industry staple, Autodesk maintains many of the original commands and options which newer users may feel are obsolete or redundant. One such command may be LIMITS. This holdover from the earliest versions was once a very important tool in drafting with AutoCAD. But now? It is difficult to say.

I remember reading an article online that stated there were three golden rules in using CAD. One of those rules is that you must always set your drawing limits. Regardless of the other two rules, I find it hard to agree with that one rule: always set your drawing limits.

It can be argued that even the name is a little dated. Limits. What is being limited?

Where do we find the LIMITS command?

Many of us define our drawing limits without realizing that we are doing it. If you begin new drawings using Create New Drawing and Use a Wizard then you must define the "…area you want to represent using full scale units." (Note the absence of the word "limits.") This represents your drawing limits.

Figure 1: Usa a Wizard

Rest assured that if you want to change your drawing limits after the fact it is quite easy to do. At the command line you can type LIMITS and ENTER or you can use the FORMAT pulldown menu and select DRAWING LIMITS (see Figure 2).

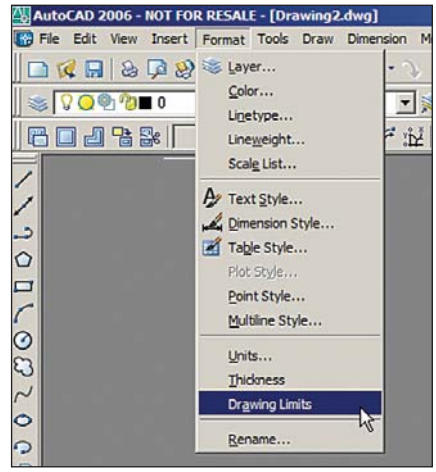

Figure 2: Pulldown Menu

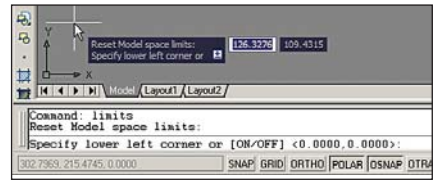

Figure 3: Lower Left

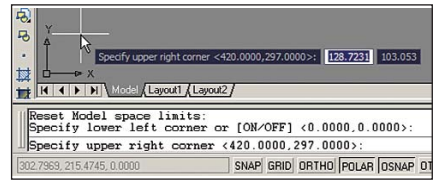

Figure 4: Upper Right

Unfortunately the LIMITS command does not have a spiffy dialog box. You must input the coordinates for the lower left and upper right corners of your drawing limits area. As always, you have the option of typing in those X and Y coordinates or using your mouse to pick those two points (see Figures 3 and 4).

The original purpose of limits

Originally the drawing limits were used primarily to set up the size of your paper when printing your drawing. When Paper Space was introduced, this made using limits for printing purposes obsolete to all but those who were still using the old, tried-and-true methods of plotting setup. That is understandable—in an office environment, time is money and new concepts take time to understand and implement.

What good are limits now?

Let's look at what drawing limits now represents. Whenever you turn on your grid in AutoCAD you will notice that the grid dots do not fill your entire drawing area when you zoom extents. That is because the grid will only display within the limits of your drawing. Does that mean you are restricted to drawing only within the dots? Typically the answer to this question is No (I will come back to this later). See Figure 5.

How do your drawing limits affect the ZOOM command? Many people are still not clear about the difference between ZOOM EXTENTS and ZOOM ALL. Here they are in a nutshell.

- Zoom Extents changes your zoom magnification so that all objects in your drawing are displayed and results in the largest possible display of all the objects. Objects that are on frozen layers are ignored while objects that are on OFF layers are included.
- Zoom All considers the objects in your drawing and the drawing limits. Whichever is larger will determine what is displayed. Just like the Zoom Extents—objects that are on frozen layers are ignored while objects that are on OFF layers are included.

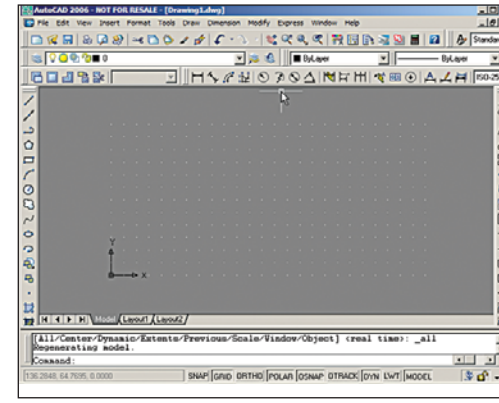

Figure 5: Grid

What this means is that when you set your drawing limits to be larger than the objects you have drawn, a ZOOM ALL will always display the larger area as defined by the drawing limits.

One last thought

I mentioned earlier on that the LIMITS command can actually prevent you from drawing outside of the predefined limits. I received a drawing from someone earlier this year. When I tried adding information to the drawing I received the message shown in Figure 6.

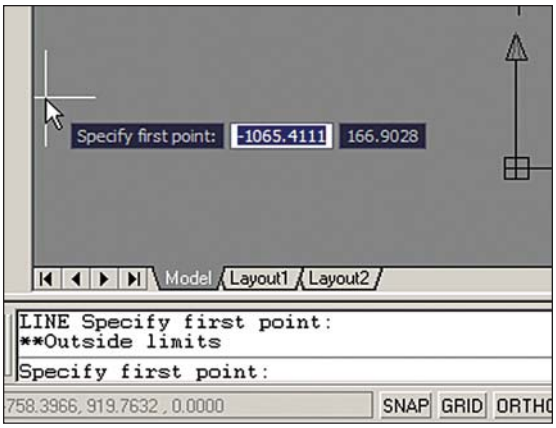

Figure 6: Outside Limits

I have been using AutoCAD for 20 years and this was the first time I had ever seen this. I assumed it had something to do with drawing LIMITS and after a little investigation I discovered that LIMITS, if it is enabled, can indeed restrict where you can draw. When you begin the LIMITS command you will see that there is an ON/OFF option. This option allows you to prevent (or enable) drawing outside of the limits.

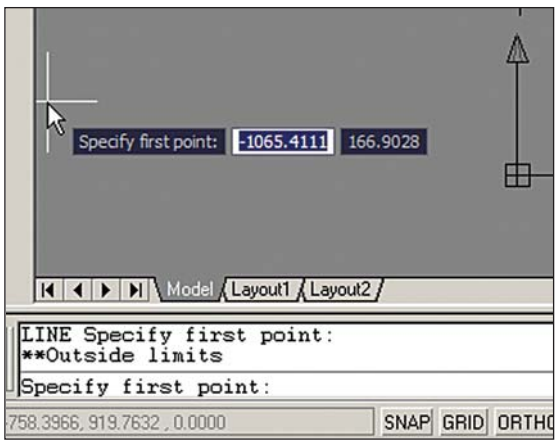

Figure 7: On-Off

I'm not sure why this would be beneficial, but it can cause a headache if you do not realize what is going on.

I invite anyone to email me with your opinion about this AutoCAD feature. Do you use it? Do you even know it exists? I hope to include your comments in a future article.

Kirby Reycraft is a faculty member with the Architectural Engineering program of the Nova Scotia Community College (www.nscc.ca) in Halifax, Nova Scotia. He was been a hard-core AutoCAD user for 20 years. He can be reached at kirby.reycraft@gmail.com.

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Tips for ADT 2005/2006

Here is a collection of productivity-boosting tips for Autodesk Architectural Desktop

Tip #1 – Select-Drag OR Select-Ctrl-Drag to Constructs or Elements in Project Navigator

A project in its design phase doesn't necessarily benefit from being drawn up in Project Navigator. However, once the CD production phase begins, here is a quick way to perform an orderly transfer of selected geometry in Project Navigator.

First, create a new Project and set up its Levels.

Now, select the geometry in the drawing that you'd like to be a Construct or an Element by itself. While holding the Ctrl key, drag that geometry onto the folder Construct or Element. Follow the respective wizards, and you're done!

If you don't want to save a copy of your geometry, do not press the Ctrl key while dragging your geometry over. You will execute a Cut instead.

Another way of including already drawn geometry into Project Navigator is to right-click on any of the Construct, Elements, or Views folders and choose Save Current Dwg as…. (Note, however, that this way the entire dwg file is saved under Project Navigator.)

The nice feature of the first drag-over method is that it pastes to original coordinates, so your drawings' coordinates will always be the same with respect to the original one. Be careful to always draw all floor plans with the same coordinates in the different dwg files, so that when transferred in Constructs, they position exactly on top of each other at their respective levels.

If you've dragged over a floor plan into Constructs that repeats on several of the levels in your project, simply right-click on the Construct and choose Copy Construct to Levels.

Tip # 2 – Override the Xref display representation in sheets

Often a sheet (any paperspace), whether part of Project Navigator or not, contains more than one viewport revealing geometry that needs a varied display representation. For example, a sheet containing both a ceiling plan and light fixture details needs a Reflected DC and a High Detail

Figure 1: Choose Edit Object Display to begin the process of overriding the host drawing's default representation.

DC simultaneously. Sometimes, when viewports are created in paperspace, they do not carry over the original DC. A nice feature in 2005/2006 allows the user to override the host drawing's (the sheet's in this case) default representation in order to manipulate individually all viewports.

Once the viewports (for instance, the reflected ceiling plan and the light fixture details) have been created on the sheet, click inside each one to switch to model space, select the Xref, and right-click it. On the pull-down menu, choose Edit Object Display. In the Object Display dialog, under the Xref folder, check the box to "Override the display configuration set in the host drawing" and from the list below choose the Display Configuration needed (the Reflected one for the ceiling plan and High Detail for the detail drawings, respectively). Now, this reflected ceiling Xref will follow the Reflected Display Configuration set in the original drawing and the details will follow the High Detail DC set in their original drawings.

Tip # 3 – AEC polygons as substitute for hatches

Hatches are probably one of the most frequently used features in any AutoCAD® or Architectural Desktop® version and they've certainly evolved in complexity and ease of use. But AEC polygons, having the same display capabilities as hatches, can be utilized instead of hatches to save time and increase accuracy. Moreover, they can be easily masked off using mask blocks. Let's consider the following scenario, which examines how AEC polygons are a better alternative to hatches. You're creating a floor finish plan of a house with rooms needing carpet, hardwood, and tile finishes as in Figure 2. Instead of creating a polyline and then hatch by selecting it, you can simply outline the rooms using the AEC Polygon tool (you can search it in the Content Browser and pull the tool onto your palette). A right-click on the created polygon will reveal many useful options.

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For instance, you can execute the AEC Modifying tools, you can add/remove vertices (ADT 2006 only), you can hide/show an edge, and most importantly create different styles that control the appearance.

In the example in Figure 2 there are three AEC polygon styles created—carpet, hardwood, and tile. The Display Properties of each have been changed to show the appropriate hatches. The tile polygon in the bathroom also demonstrated that by using the subtract command under the AEC Modifying Tools, located on the right-click menu. You can subtract the toilet fixtures from the polygon for an accurate floor finish representation.

Probably the most effective and better use of AEC polygons is when used with mask blocks. The rooms with carpet finish show a mask block tag that identifies the room finish. A right-click on a mask bock reveals the option to attach the AEC entity to be masked. This is where a simple hatch will not produce the same results because hatches are not AEC entities. The tag is always attached to the polygon, so if moved, its masked region will not change.

AEC polygons can be used for ceiling finishes and elevations finishes. They are easier to manipulate than hatches and, when used appropriately, are more efficient and time saving.

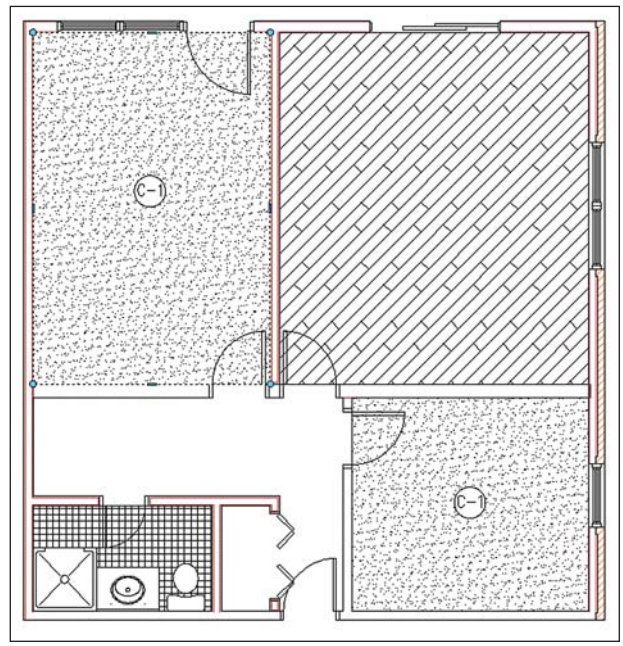

Figure 2

Tip # 4 – Import/Export display representations

The Import/Export feature in ADT 2006 has improved dramatically on its predecessor in ADT 2005. Here is how each is executed.

In ADT 2005, under the Format Menu, choose Display Manager. Right-click on the Configurations or Sets folder, and choose the Import/Export option. A dialog box appears, listing on the right the display configurations available in the currently opened drawing. Click Open and browse to the drawing that contains the needed DC. Once opened, the left side of the dialog box will list the DC contained in that drawing. Simply choose Import/Export to adjust the two lists.

In ADT 2006, this dialog box no longer exists. Instead, once the two drawings are opened in the Display Manager tree, one can Copy/Paste between the Configurations and Sets folders of the two.

Tip # 5 – How to make palette groups

ADT 2006 offers a way to organize your palettes into groups. This proves particularly helpful when dealing with a large number of palettes or when different groups of palettes are used for different projects.

You can access this new feature in ADT 2006 by right-clicking on the title bar of the Tool Palettes and choosing Customize. A dialog box appears, listing all the available palettes on the left and how they are grouped on the right. Simply by dragging and dropping you can reorganize the groups, create new groups by right-clicking on any group folder, and even import/export groups. Moreover, you can have the same palettes appear under different groups and delete unnecessary palettes from a group by dragging the palette out from the right and into the left pane.

QuickTip # 1 – DrawOrder in Xrefs

Many CAD users have toiled over the problem of consistent DrawOrder between the original dwg and the Xref. Still, the best solution out there proves to be the FLOAT command. It's a download from Autodesk discussion groups. FLOAT works the same as DrawOrder, with the exception being that when a drawing is Xref'd it saves the original display.

QuickTip # 2 – Taskbar

If you type at the command line TASKBAR, you can set the variable to 1. This allows you to see all of your currently open drawings on the bottom of the screen for an easy switch between them. It sure beats having to open the Window menu to choose the desired drawing.

QuickTip # 3 – Style Manager / Display Manager set up

I'm sure all of you have templates from which you copy things or start drawings. Why not make things easier by having these template DWGs available at all times in your Style Manager and Display Manager under the Format Menu? Both of these dialog boxes show the currently opened drawings when you access them. However, if you manually open your template DWGs while inside the dialog boxes, these DWGs will stay open, even when you close your ADT session and later come back to it, while all other DWGs disappear once you close them or exit the session. This way, every time you need to pull something in from a template DWG, they will always be available under the Display Manager or the Style Manager.

QuickTip # 4 – Toggle wall graph display

The most effective way to detect why two or more walls are not cleaning up is to right click on a wall and, from the shortcut menu, choose Cleanups and then Toggle Walls Graph Display. If the blue lines are not intersecting, you're in trouble! Repeat the command to go back to the original display.

QuickTip # 5 – Drag OR Ctrl+Drag

When any geometry is selected, you can simply move it by dragging it or copy it by holding down the Ctrl key while dragging.

I hope these tips will help boost your productivity in Architectural Desktop 2005 and 2006!

Velina Mirincheva works atVIMdesign, an architecture and ADT consulting office. She has been an AutoCAD user for 8 years and is an ADT 2005 Certified Expert. She can be reached at vimdesign@comcast.net.

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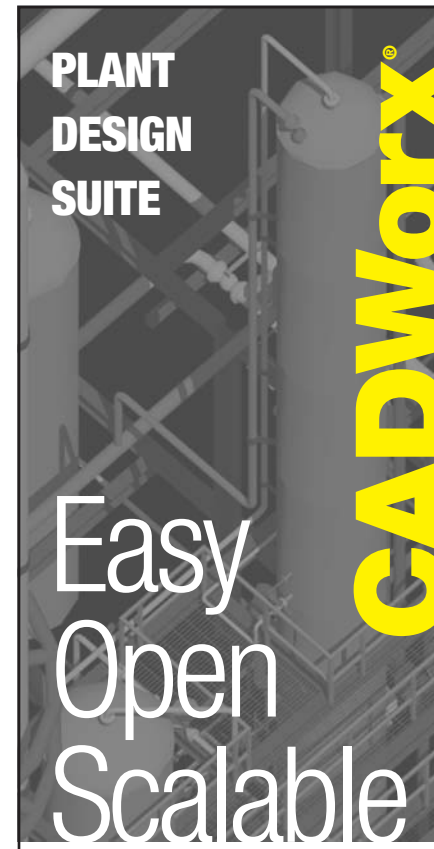

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On The Back Page

David Kingsley

Witness to History

CAD was my life's profession well before Autodesk, Inc. existed. While Carol Bartz was working at Sun Microsystems, I worked, as did many of you, on a mainframe system. I was initiated into the UNIX world on Sun Sparc Stations. Lots of *AUGIWorld* readers responded to my earliest columns about those times.

The big Autodesk news these days is Carol Bartz's departure as CEO. In an era when CEOs are being indicted and escorted to jail in handcuffs, Carol quietly steps down at a time of her choosing and receives the unanimous accolades of her peers. *Forbes* magazine named her one of the 100 most powerful women on the planet, and *Barrons* magazine calls her one of the 30 most respected CEOs in America. She has been on the President's "Information Technology Advisory Council" since late in the Clinton administration.

Carol Bartz has been one of my heroes for many years. She has always been a staunch supporter of AUGI, and all of its members owe her a debt of gratitude for her brilliant leadership and vision over the past 14 years. Without her guidance, your profession would probably be very different.

When Carol joined Autodesk in 1992, the six-year-old Autodesk's annual revenue was $275 million. In 2006, Autodesk's revenue *growth* alone is projected to be that much with 2005 revenues in excess of $1.2 billion. The stock market's reaction to the news was a brief 1 percent drop in value, which in the world of stocks exhibits virtually 100% investor confidence.

She leaves Autodesk with a current product lineup that is nothing short of phenomenal. We're not talking about a few cool bells and whistles here—we're talking about multiple paradigm shifts such as Sheet Sets, Dynamic Blocks, and Tool Palettes. I can say this from the standpoint of a long-time user because, like you, I earn money using Autodesk products. Autodesk has also recently established a major agreement with Microsoft regarding cross-licensing of patents, which will benefit all of us.

The AUGI Board of Directors, on which I served for six years, met with Carol and more recently with her successor, Carl Bass, at our bi-annual meetings at Autodesk headquarters. My experience meeting with Carol reminded me of a boss and mentor I had many years ago. I always dreaded meeting with him because he had the uncanny ability to put the spotlight on a problem I didn't even know I had. The solutions always required a shift in mindsets and hard work, but in the end, everybody won, and I was smarter. Trust me, a few hours with a person of Carol Bartz's caliber is something to be treasured.

Bear in mind that Ms. Bartz is not retiring. In addition to advising during the transition, she becomes the company's first Executive Chairman of the Board. She will be developing business relationships in Eastern Europe, India, and China, which she envisions will be a half-time job.

Let's sum this up: She cuts back to half-time, travels the world on the company expense account, and is relatively unfettered by professional timetables. As Oprah would say, "You Go Girl!"

Carl Bass and Autodesk 3.0

Carl Bass is a highly respected person in the CAD industry and has been groomed for this position for several years. He envisions his upcoming tenure as Autodesk 3.0. If you consider the John Walker era as Rev 1.0, and Carol Bartz as Rev 2.0, this makes sense. From another perspective, Mr. Bass has stated that part of his plan is to accelerate the shift from 2D to 3D (Autodesk 2.0 to Autodesk 3.0… get it?).

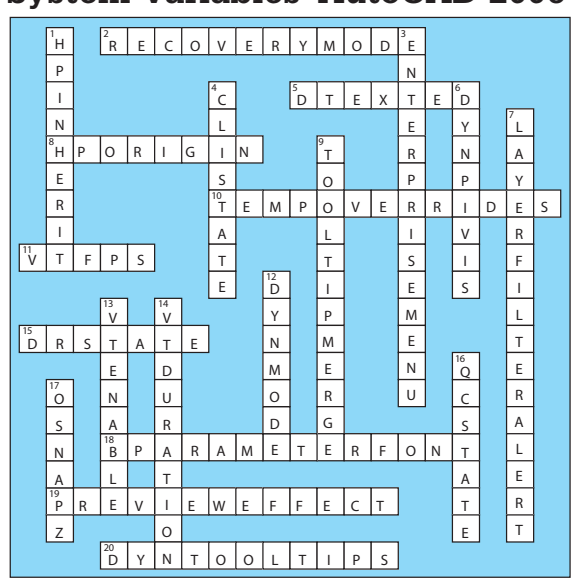
To paraphrase a *BusinessWeek Online* interview with Mr. Bass: "We've all seen blockbuster movies with amazing digital animation. Autodesk picks up where the cinema leaves off by giving its users the tools to cross the bridge from digital models to physical reality. We enable them to create electronic prototypes to design and test of all the bridges, buildings, and flying cycles, hopefully stopping short of a real King Kong."

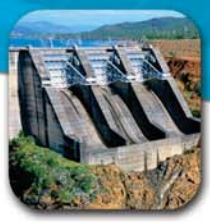
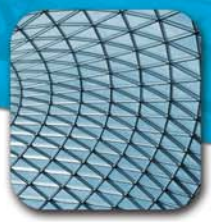
Carl is very much one of us and has paid his dues. We look forward to the next era in Autodesk leadership.

David Kingsley served from 1999-2004 on the AUGI Board of Directors and is the Director of Electrons at CADPlayer Web Courseware. He can be reached at djkingsley@cad-tv.com

ANSWERS
System Variables – AutoCAD 2006 crossword puzzle on page 7

System Variables–AutoCAD 2006



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